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INSTANT ACCESS:
THE UNCOMMON UNION OF NEW MEDIA & SPACEFLIGHT

D. Brooke Owens
Space Transportation Industry Analyst
Federal Aviation Administration
Washington, DC, U.S.A.
brooke.owens@faa.gov
Twitter: @d_brooke_owens

John Sloan
Space Policy Analyst
Federal Aviation Administration
Washington, DC, U.S.A.
john.sloan@faa.gov

Abstract

Traditional media is dying. New media is on the rise. It is an undeniable fact that we live in an era of rapid communications technology development. Social networking technologies that affect the way that we communicate are swiftly penetrating our daily lives. Tools such as Twitter, FaceBook, and YouTube enable the average person to communicate instantaneously with a global audience. So what influence does this wave of new media have on the space community? How can FaceBook help advance the cause of commercial space transportation? What does Twitter have to do with the International Space Station? This paper will explore how this new interactive media is currently affecting the space community and its potential for education, outreach, marketing, and even technical collaboration - all from the convenience of your laptop or phone. Further, recommendations will be made for the reader to apply what they have learned. As individual space enthusiasts utilize the interactive tools of the day, they are empowered to freely and effectively exchange ideas beyond national borders. This encourages a spirit of international cooperation that could help promote the successful and peaceful advancement of space for years to come.

1. Just what exactly is new media?

"The only constant is change, continuing change, inevitable change, that is the dominant factor in society today. No sensible decision can be made any longer without taking into account not only the world as it is, but the world as it will be."

— Isaac Asimov

To understand the effects of new media on the space community, one must first understand terms like "social networking" and "social media" and distinguish between traditional media and new media. Further, the technologies themselves must be explained in fundamental terms for the non-user. A snapshot of selected examples is provided to aid this explanation.

What comes to mind when one thinks of the term "new media?" We asked the online community this question via Twitter and Facebook (two new media programs that will be discussed later). The results were varied. Using a free online program called "Wordle," we created a word cloud (see picture below) to illustrate what words people associate with "new media."[1]

Before one can really explore the opportunities within the world of new media, one needs first understand the basic lexicon. In a field such as this, populated by "techies," "nerds," and "computer junkies," it might be difficult for a newcomer to fully understand all the terms. Still a basic understanding is both helpful and attainable. Another thought to bear in mind is that this new media is largely digital and interactive, so throughout this paper there will be references to videos, sites, and other online resources. This paper should serve as a guide to understanding some of the basic principles upon which the new media community is built. To reinforce this basic understanding, the reader

Figure 1: New Media Wordle

should supplement this material by visiting the various sites online and exploring these new technologies first hand.

In this spirit, a few resources have proven to be particularly useful in explaining the concept of social media, such as the "Lunar Exploration in 140 Characters or Less" and "Social Media in Plain English."[2] These videos can both be found through a quick Google search and are readily available on YouTube. Both were presented at the Federal Aviation Administration Office of Commercial Space Transportation's Annual Conference in February, 2009 at a "Wired for Space" panel chaired by the lead author. At this point, perhaps it is prudent to pause and define YouTube. YouTube is a website where anyone can upload and share a video online.[3]

Mike Fabio, then Community Manager for the Google Lunar X PRIZE at the X PRIZE Foundation, succinctly unpacks the concept of social media in "Lunar Exploration in 140 Characters or Less" by saying, "Social media are technologies that allow anyone to communicate with everyone."[4]

It is a pretty basic in concept, yet also profound. Through social media, anyone can generate content and show the world what they have done. Further, the process is instantaneous and they can involve the public in the process through commentary, ratings, and various other methods of engagement. Simple, right?

"Social Media in Plain English" guides the viewer through the concept of social media through the analogy of ice cream stores. The basic idea is that a major ice cream store is like traditional media. It is both well known and effective. Smaller, more specialized shops, offering unique flavors or styles of ice cream making, refer to new media. They are run by one or a few individuals and offer specialized items. Also, they engage the public in rating, reviewing, and recommending their products. In the case of the ice cream store, opinion boards were put

outside the store for customers to write comments and vote on their favorite flavors. This community input allowed the small shops to make constant course corrections to improve their product and enhance customer satisfaction.

This analogy works well to describe new media. Individuals generate some sort of content then invite the public to make comments or rate the value of the experience. Their friends tell their friends and the process goes "viral" – wherein something essentially self replicates (or breeds more viewers) in a manner independent of heavy promotion or marketing.

Table 1 below provides a basic lexicon for some of the terms associated with new media.

Table 1: Basic New Media Jargon

Term	Definition
Blog	"A blog (a contraction of the term "weblog") is a type of website, usually maintained by an individual with regular entries of commentary, descriptions of events, or other material such as graphics or video."[5]
Digg	"Digg is a social news website made for people to discover and share content from anywhere on the Internet, by submitting links and stories, and voting and commenting on submitted links and stories."[6]
FaceBook	"Facebook is a social networking service that lets you connect with friends, co-workers, and others who share similar interests or who have common backgrounds."[7]
Flickr	"Flickr is an image and video hosting website, web services suite, and online community platform. In addition to being a popular website for users to share personal photographs, the service is widely used by bloggers as a photo repository."[8]
MySpace	"MySpace is a social networking website."[9]
New Media	"New media is a term meant to encompass the emergence of digital, computerized, or networked information and communication technologies in the latter part of the 20th century."[10]
Social Media	"A category of sites that is based on user participation and user-generated content. They include social networking sites like LinkedIn or Facebook, social bookmarking sites like Del.icio.us, social news sites like Digg or Reddit, and other sites that are centered on user interaction."[11]
Social Networking	"Social networking is the grouping of individuals into specific groups, like small rural communities or a neighborhood subdivision, if you will. Although social networking is possible in person, especially in the workplace, universities, and high schools, it is most popular online."[12]
Twitter	"Twitter is a service for friends, family, and co–workers to communicate and stay connected through the exchange of quick, frequent answers to one simple question: What are you doing?"[13]
Viral Marketing	"The buzzwords viral marketing and viral advertising refer to marketing techniques that use pre-existing social networks to produce increases in brand awareness or to achieve other marketing

	objectives (such as product sales) through self-replicating viral processes, analogous to the spread of pathological and computer viruses. It can be word-of-mouth delivered or enhanced by the network effects of the Internet."[14]
YouTube	"A video sharing website on which users can upload and share videos."[15]

For an international list of social networking sites, please visit, http://en.wikipedia.org/wiki/List_of_social_netw orking_websites.[16]

2. Traditional vs. New Media: What's the Difference?

"Never forget to keep it real…it's important that you remember that the people at the other end of your communication are exactly that, they're people and they expect you to be human as well. This is a fundamental difference between traditional and new media: the human factors that define what we call social media."

— Mike Fabio

Unlike traditional media, new media goes beyond delivering the news. It encourages and facilitates interactive participation. Users have the opportunity to comment on, rate, or redistribute the information. They can be involved. Further, anyone can do it. Students, political candidates, government officials, regulators, astronauts, rocket builders, teachers, and even mission controllers now have instant access to a limitless audience.

Under a traditional media approach, authority is centralized, messages are controlled, and resources are limited (personnel, budget). Communication is largely one-way. Feedback can take days or even weeks, sometimes in the form of "letters to the editor"— also controlled by a central authority.

2.1 The Press Release

One of the traditional approaches to media is the press release. According to public relations author and professor, Deirdre Breakenridge, the basic press release is no longer enough:

"In the past, PR people would create a press release for a brand and then distribute the announcement over a wire service or blast it out to a large database of contacts. It's a 'throw it up against the wall and see if it sticks' type of effort. It's not a targeted approach and, in more cases than not, if the journalist does not have a relationship with you, the release is overlooked or discarded. Press releases do not build relationships they are just tools. And, online, people are looking to connect in their communities with other like-minded people. It's the people who build relationships and not the tools or technology that we use. If you are only blasting out press releases, then you are missing out on a tremendous opportunity to connect with people directly and to build a strong, loyal following through social media."[17]

People want more involvement in the experience. New media provides a venue that gives the people what they want.

2.2 Social Networks

Former Wired magazine editor, Kevin Kelly, wrote that: "In the past, constructing an organization that exploited hierarchy yet maximized collectivism was nearly impossible. Now digital networking provides the necessary infrastructure."[18]

By engaging a network of people, new media tools empower individuals to distribute information to multiple participants at very low cost. Many contributors are unpaid and put in more energy than they can get in return. As a result, the influence of contributors acts a multiplier, extending beyond an individual to influencing a collective community. [19] Kelly goes on to talk about the return on investment with these types of sites:

"Serious contributors to these sites [Digg and Reddit, which let users vote on links] put in far more energy than they could ever get in return, but they keep contributing in part because of the cultural power these instruments wield. A contributor's influence extends way beyond a lone vote, and the community's collective influence can be far

out of proportion to the number of contributors. That is the whole point of social institutions—the sum out performs the parts."[20]

2.3 Informality & Personality
Social media and its users are largely informal, personal even. For example, Twitter is a program that allows individuals to communicate with their followers (those that have signed up to receive updates) in 140 characters or less. Based on this constraint, the updates are short. Often, informal language or symbols are used. An example of a tweet (update on Twitter) might be "Check out link 2 Human Space Flight report www.website.com" or "White Knight Two just landed! 2 good 2 b true!" The key to this media is to update often to keep things interesting. So throughout the day, followers get a sense of what the individual is doing, working on, or thinking. Do not be afraid to add a little personal information. While followers will not want to be inundated with personal details, an occasional comment that speaks to one's humanity typically engenders support and connection with one's followers.

2.4 A Virtual World without Boundaries
Finally, it is important to bear in mind that the possibilities are virtually limitless with respect to the programs available and the various ways to use them in the new media community. The figure below is called a conversational prism, and is a "living, breathing representation of social media and will evolve as services and conversation channels emerge, fuse, and dissipate.'[21] This serves to illustrate the myriad of possibilities that exist for communication and collaboration within the realm of social media.

3. What does Facebook or Twitter have to do with space?

"The impact of space activities is nothing less than the galvanizing of hope and imagination for human life continuum into a future of infinite possibility."

— Vanna Bonta

New media technologies are transforming the way business (and fun) is done throughout our very own space community. The relevance of this technology to the space industry is crucial. "What role does (or could) new media play in the space sector? How can this new style of communication further the cause of space?" Answers will be provided by exploring the efficacy of new media as mechanisms for space outreach; education; marketing; and technical exchange. These ideas will then be substantiated with specific examples from the International Astronautical Federation, Federal Aviation Administration's Office of Commercial Space Transportation, NASA, and various other space organizations.

3.1 International Astronautical Federation
A particularly interesting example for the audience of this paper is how the International Astronautical Federation (IAF) itself has adopted new media techniques to accomplish its space objectives. In an email statement from Scott Hatton of IAF, he talked about how the communication media have evolved over the course of the Federation's history.

> "The IAF has a membership with which it communicates. As new technologies evolve, so do the communications methods. Thirty years ago, the Federation communicated with every member by letter, twenty years ago by letter and fax, ten years ago by letter, fax and email. The whole way people communicate with each other has changed and the Federation has reflected that."[22]

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Figure 2: Conversation Prism
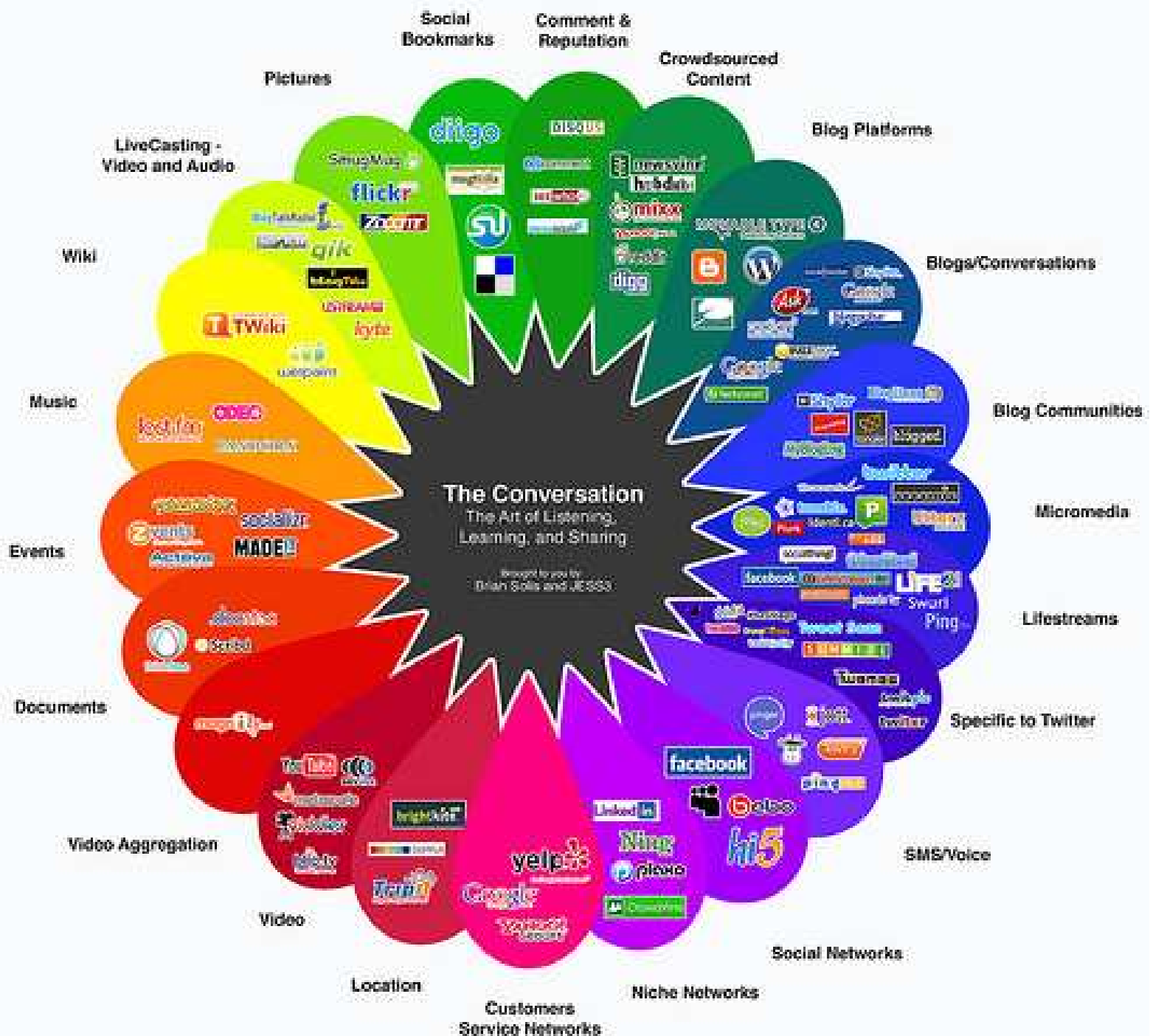
A specific example occurred during the writing of this paper. Due to a server malfunction, IAF needed to inform the International Astronautical Congress (IAC) authors that the deadline for paper submission was being extended. In years past, a mass email would have been sent out and a notice would have been posted on the website. This time, in addition to the two actions listed above, IAF was also able to instantaneously communicate with its members through various Web 2.0 tools including Twitter, Google Group, Facebook, and their blog.[23]

3.2 Federal Aviation Administration Office of Commercial Space Transportation

The Federal Aviation Administration Office of Commercial Space Transportation (FAA/AST) operates under a dual charter from the United States Congress to both protect the uninvolved public during commercial spaceflight operations as well as to promote the successful development of the U.S. commercial space transportation industry. FAA's internal online publication, FAA Focus, recently did a piece on how FAA is using new media technologies to fulfill that promotion role. Journalist Scott Hagen writes, "Promotion is what will help drive this industry as it blasts forward into the lives of all people based on its convenience for travel and necessity to further personal exploration. The bigger the buzz around commercial space transportation, the more the public will desire it, making it cheaper, safer and closer to a reality." The benefit of the collaborative nature of this new media era is that FAA does not have to do the job alone. All the other organizations employing these techniques towards the goal of increasing awareness about commercial space transportation compliment each other for the combined benefit of the industry.[24]

In this promotional role, FAA has reached out to the new space community through several new media avenues. One example is the "Wired for Space" panel held at the FAA/AST's annual conference this past February. In this panel, experts from the space industry that use new media technologies to promote their space agenda or even glean technical advice were invited to discuss their thoughts on the subject. Representatives from the X PRIZE Foundation, SpaceX, the Conrad Foundation, and TrueZer0 engaged in an open dialogue with both the audience in the room and an online audience via Twitter. To further highlight the utility of new media, one of the panelists was unable to attend the conference but still provided a virtual presentation. Other examples include using programs like Twitter or Facebook to inform the public about upcoming space events, newly released reports by the FAA or upcoming changes to regulations. This paper itself could also be considered to be another example.

3.3. X PRIZE Foundation

In recent years, the X PRIZE Foundation has significantly increased its online presence and built impressive online community. The authors asked the Foundation's new online community manager, Amanda Stiles, to explain the role of social media in the GLXP. Ms. Stiles had this to say:

> "The Google Lunar X PRIZE is a program designed to play an instrumental role in the launching of "Moon 2.0", which is a new era of lunar exploration focused in part on the creation of sustained participatory exploration. To achieve this, the Google Lunar X PRIZE has adopted online and social media tools to inspire, engage, and interact with an international audience. The success of this methodology is attributed to the sharing of compelling content, distributed through a diverse suite of online media tools that encourage feedback and facilitate discussions. In this manner, the consumption and creation of knowledge is promoted, as well as open interaction between teams, staff, industry, academia, and the general public."[25]

It seems to be working. On Twitter alone, there are more than 4,000 followers for the Google Lunar X PRIZE (Twitter handle: @glxp).

3.4 Northrop Grumman Lunar Lander Challenge

Based on the collaborative nature of the era we live in, it is not surprising to find that the engineers and entrepreneurs competing to be on the cutting edge of space technology competitions are using all the tools available to them in designing their systems. At a basic level, many of these companies are using new media technologies for promotion, outreach, and education.

As many readers will likely know, the X PRIZE Foundation administers the Northrop Grumman Lunar Lander Challenge (NGLLC) in which entrepreneurs build and demonstrate lunar lander vehicles to compete for U.S. $2 million in

National Aeronautics and Space Administration (NASA) prize money.[26] The fascinating factor with respect to this specific group of space enthusiasts lies in their use of new media for technical exchange and innovation. Bear in mind, all of these teams are competitors. They are working to be the first team to successfully demonstrate the technology and win the prize. Literally, millions of U.S. dollars are on the table. Yet, even in such a competitive environment, new media has fostered an incredible network of collaboration in this "new space" community. Many of these visionaries know that in order for a profitable market to exist, they all have to "get up to the top of the plateau" so to speak in terms of technical competence, demonstration, and public trust. So they help each other ascend to the top of the mountain. Make no mistake. Competition will kick in and they will duke it out once they get there. In the meantime, a sense of camaraderie and even friendship exists among these rivals.

Several of the teams have blogs – Armadillo Aerospace, Masten Space Systems, Inc., and Unreasonable Rockets for example.[27] Not only are they blogging about their successful tests or flights, they are also broadcasting specific details of how they're building their system; troubleshooting design flaws, and asking the virtual community for help and advise. For example, Team 1 may tell Team 2 how to avoid a chamber burn-through or some other technical problem. Also, there is a fair amount of both praise for the successes and good natured ribbing among contestants.

3.5 National Aeronautics and Space Administration

One would be remiss to talk about the NGLLC, or to provide a discourse on social media for that matter, without also mentioning NASA. NASA has made great strides in communicating through social media. NASA Astronauts now Twitter from Space. NASA is on FaceBook, Twitter, MySpace, YouTube, Flickr, and other sites. NASA has dedicated an entire section of their webpage to assisting the public in collaborating and connecting with NASA.[28] Special Facebook pages were made for the Mars rovers Spirit and Opportunity. They had nearly 1,700 online friends from all over the globe.[29] These are just a few examples of the many and varied ways that NASA has sought to reach out to the public in the realm of social media.

3.6 European Space Agency

The European Space Agency is also using social media towards space ends. According to Fernando Doblas, Head of the Communication and Knowledge Department at the European Space Agency (ESA), "Web 2.0 media are becoming very important. The space sector needs to be present there if it wants to connect with the general public, in particular with the Gen. Y target."[30] ESA has a channel on YouTube and a presence on Twitter, Flickr and LiveStream.

3.7 Caribbean Spaceport

Joost Wouters, Chief Executive Officer of Caribbean Spaceport, had this to say on the topic of new media:

> "Generally space companies, which belong to the innovative high tech sector, should in our view reflect in their media philosophy their high tech innovative status by using New Media including 'social' new media tools for at least part of their communications and PR. This by its nature is likely to hold even stronger for New Space companies."[31]

> "More importantly space companies can functionally and logistically benefit from e.g. the low cost, high visibility, direct, easy and often permanent accessibility, swiftness, 'personal involvement feel' and interactivity of (most) new P2P, B2P and some B2B [peer-to-peer, business-to-peer, business-to-business] media. When the design of the communication strategy is based upon sound analysis, this should hold for both traditional as well as new space companies. ...However, Caribbean Spaceport believes that depending on contexts where focus on specific audiences, control of content and specific business or PR objectives require to be served, more traditional media tools may remain vital for all companies."[32]

3.8 Orbspace

As a new user of new media tools, Aron Lentsch of Orbspace Engineering in Austria noted that in order to be effective, social networking specifically for business purposes will require a continuous effort. In addition, staying in contact on the personal side through new media tools was important to spend time on because the border between what is private and what is

business is unclear. "Friends and colleagues from today might be customers and decision makers tomorrow."[33]

3.9 Conrad Foundation

Last, but certainly not least, it seemed important to offer a reference to an education-focused effort such as the Conrad Foundation. Joshua Neubert, Executive Director, discussed the effectiveness of new media technologies for his non-profit focused on innovative education at the high school level.

"The Conrad Foundation incorporates social media as an integral part of its annual Spirit of Innovation Awards program. Over the course of the year, high school students are guided through a pathway of creating innovative products in various fields of science and technology. Most notably in this process, social media plays a key role during the finalist phase of the program. Teams selected as finalists each develop an online profile in which they promote their products to the world. Each Finalist team creates blogs to show the public their development process and videos to highlight and market their key concepts. In order for this social media portion of the Spirit of Innovation Awards to be successful in attracting attention to the teams, more is required than simply creating the profile pages. There must be an incentivizing factor(s) for people to visit them. The Conrad Foundation has included two of these factors: (1) A "People's Choice Award" incorporates public vote as a small portion of the team's overall score for the awards selection. Because of this, finalist teams become ambassadors to their friends, family, and community, promoting their work and actively encouraging visits to their profile; (2) Online donation opportunities are provided to the teams through their public profile. This allows each team to raise funds to continue the development of their products. This monetary incentive coupled with the People's Choice Award creates a powerful social media mechanism accomplishing important goals both for the Foundation, and for the students competing in the program. The social media outlet encourages student participation and opens entirely new opportunities to drive education and technology development."[34]

As illustrated above, space players are paying attention to the new media trend. These organizations provide only a snapshot of the activity occurring in the international online space community.

4. This is awesome! How can I get started?

"The secret of getting ahead is getting started. The secret of getting started is breaking your complex overwhelming tasks into small manageable tasks, and then starting on the first one."

— Mark Twain

4.1 Keep Your Eye on the Goal

If the reader is considering jumping into this new media frenzy, there are some basic things to consider. First, decide upon a goal. Is the objective to market a company or product? Is it outreach or education? Or perhaps a means to seek technical advice and dialogue would be extremely useful. Likely, it will be some combination of the above, but it is important to know *what* one is looking to communicate before researching *how* to do so.

4.2 Explore

Second, explore. Go online and click through various sites. "Google" unfamiliar terms. One link will lead to another and another. This is a great way to research in this field. Countless articles have been written about all of the catch phrases like "social networking," "new media," and "social media." There is also significant writing on the individual technology platforms like FaceBook, Twitter, or Digg. After getting a feel for what is out there, see what feels comfortable for your particular needs. Another key to success in this regime is the ability to update with new content often enough to keep the audience interested.

4.3 Be Yourself

Third, be yourself. This may seem like silly advice, but it is important for the audience to feel a connection with a person on the other end of the updates.[35] Success here depends in part on striking a delicate balance between providing interesting information and becoming a personality that the audience identifies with and enjoys.

It should be pointed out that *how* new media tools are used is crucial to exploiting their full

potential. A University of Maryland study of more than 6,000 Twitter postings during 2009 by members of the U.S. Congress found that "politicians spend most of their time on Twitter promoting themselves."[36] According to the study, 80 percent of the postings were in two categories: links to news articles and press releases available elsewhere and status updates of what a member of Congress was doing (which was not necessarily about their day job). Only seven percent of time on Twitter was spent interacting with citizens. The study "concluded that Twitter has yet to fulfill the promise of bringing elected leaders closer to their constituents."[37] This represents one opinion. The authors would argue that such access to the variety of thoughts, opinions, and feelings of their Congressperson allows their constituency to feel more connected to the person behind the position, and is yet another example of the need to be yourself.

4.4 Strategic Spontaneity
Fourth, be strategically spontaneous. It should seem like these updates are just coming off the top of your genius brain. However, it often takes a little research, planning, and strategy to ensure that one always has good content to share with the online community.

4.5 Never Forget the Value of Community
Fifth, never forget that the most important resource is the online community itself. Through this virtual universe, one has access to ideas, praises, and criticisms. If the community likes what you're doing, they will broadcast it to their mini universe. If they hate it, chances are they will communicate that as well. The wonderful aspect of the collaborative nature of this new media is that through polls and various other techniques, the individual can solicit feedback and implement changes for the better.

4.6 Track Your Progress
Sixth, track your progress.[38] There are various tools online, such as Google Analytics or TwitterAnalyzer, for example that allow one to generate statistics about what is being read, shared, etc. These tools, particularly for business use, can provide vital assistance to shape the type of content that will reach the demographic most interested in your product.

4.7 Have Fun!
Finally, have fun! This is an interesting social experiment with profound implications on business and communication. Its informal nature lends itself to having a little fun with it. If you enjoy what you are putting out there, likely the community will as well.

Due to the technical nature of the new media community, it is a field that is constantly being updated, altered, and changed. Oftentimes, the users themselves through their feedback and cross communicating are responsible for the changes. Taking it even a step further, the online community is creating its own applications, or "apps", that allow them to do something they were not able to do with the original program. For example, with Twitter, several spin off applications that allow the user to upload pictures or documents have been created to enhance the experience and the sites' capabilities. As Time Magazine puts it, "In short, the most fascinating thing about Twitter is not what it's doing to us. It's what we're doing to it."[39]

5. Time to Explore

"All of life is an experiment."
— Ralph Waldo Emerson

New media is here. It is revolutionizing the way we communicate with the world. In this field of continual evolution, change is the only constant. Fascinating opportunities exist for those that choose to engage. This paper outlined a basic understanding of this new field and its effect on the global space community. International barriers become obsolete as individuals from all over the world instantaneously exchange ideas. Through social networking, we find it easy to promote the peaceful purposes of space with our international counterparts. Emerson's words could not ring truer with respect to new media. Now the fun begins. The reader gets to decide how to conduct their new media experiment. Hurry, the world is waiting to dream and brainstorm with you!

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